

CLAIMS

1. Expandable composition comprising at least the following compounds:

5 A: a compound comprising at least one isocyanate function

B: a polyamide

C: a compound comprising at least one acid function, preferably a carboxylic acid function.

10 2. Composition according to Claim 1, characterized in that the polyamide is an oligomer or a polymer with a number-average molecular mass of greater than or equal to 1 000 g/mol.

15 3. Composition according to either of the preceding claims, characterized in that the polyamide is chosen from polyamide 6 and polyamide 6,6, and blends and copolymers thereof.

20 4. Composition according to one of the preceding claims, characterized in that the polyamide is a linear polyamide.

5. Composition according to one of Claims 1 to 3, characterized in that the polyamide comprises starburst or H-shaped macromolecular chains.

25 6. Composition according to one of Claims 1 to 3, characterized in that the polyamide is a copolyamide of random arborescent structure.

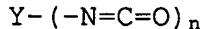
7. Composition according to one of the

preceding claims, characterized in that the polyamide is a composition comprising a linear polyamide and a starburst and/or H-shaped and/or arborescent polyamide.

8. Composition according to one of the
5 preceding claims, characterized in that the polyamide is a composition comprising a hyperbranched copolyamide.

9. Composition according to one of the preceding claims, characterized in that compound A is a
10 polyisocyanate.

10. Composition according to Claim 9,
characterized in that the polyisocyanate is a polyisocyanate of formula (I):



15 in which Y is a substituted or unsubstituted aromatic, aliphatic, cycloaliphatic or heterocyclic multivalent group optionally comprising hetero atoms and n is at least equal to 1.

11. Composition according to either of
20 Claims 9 and 10, characterized in that the polyisocyanate is a diisocyanate or a triisocyanate.

12. Composition according to one of Claims 9 to 11, characterized in that the polyisocyanate is an isocyanurate.

25 13. Composition according to one of the preceding claims, characterized in that compound A is other than a prepolymer or a polymer.

14. Composition according to one of the preceding claims, characterized in that the isocyanate functions of compound A are protected with a protecting group.

5 15. Composition according to Claim 13, characterized in that the protecting group is a lactam, preferably caprolactam.

16. Composition according to either of Claims 13 and 14, characterized in that the 10 deprotection temperature of the isocyanate functions of compound A is greater than the melting point or softening point of polyamide B.

17. Composition according to one of the preceding claims, characterized in that compound C is a 15 dicarboxylic acid.

18. Composition according to one of the preceding claims, characterized in that compound C is the polyamide B.

19. Composition according to one of the 20 preceding claims, characterized in that it comprises a pore-forming agent.

20. Composition according to one of the preceding claims, characterized in that it comprises a nucleating agent and/or a surfactant and/or a 25 plasticizer.

21. Composition according to one of the preceding claims, characterized in that it comprises

reinforcing fillers such as glass fibres, matting agents such as titanium dioxide or zinc sulphide, pigments, colorants, heat stabilizers, light stabilizers, bioactive agents, antisoiling agents, 5 antistatic agents and/or flame retardants.

22. Process for preparing a polyamide foam from an expandable composition according to one of Claims 1 to 21, including at least the following steps:
a) heating the composition to a temperature of at least
10 80°C
b) stabilizing the alveolar structure obtained.

23. Process according to Claim 22, characterized in that the temperature of step a) is greater than or equal to the melting point or softening 15 point of the polyamide of the composition.

24. Process according to either of Claims 22 and 23, characterized in that the temperature of step a) is greater than or equal to the deprotection temperature of the isocyanate functions of compound A.

20 25. Process according to one of Claims 22 to 24, characterized in that a pore-forming agent is introduced in step a).

26. Process according to one of Claims 22 to 25, characterized in that a nucleating agent and/or 25 a surfactant and/or a plasticizer is introduced in step a).

27. Process according to one of Claims 22

to 26, characterized in that reinforcing fillers such as glass fibres, matting agents, pigments, colorants, heat stabilizers, light stabilizers, bioactive agents, antisoiling agents and/or antistatic agents are
5 introduced in step a).

28. Process according to one of Claims 22 to 27, characterized in that step b) is obtained physically and/or chemically.

29. Foam obtained by the process according
10 to one of Claims 22 to 28.

30. Foam according to Claim 29,
characterized in that it has a mass per unit volume of less than or equal to 0.5 g/cm³ and preferably less than or equal to 0.3 g/cm³.